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10/564,633	01/13/2006	Hiroaki Watanabe	050825	2119
23850 7590 12/05/2008 KRATZ, QUINTOS & HANSON, LLP 1420 K Street, N.W. Suite 400 WASHINGTON, DC 20005				
EXAMINER				
SHEWAREGED, BETTELHEIM				
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1794				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/564,633

**Applicant(s)**

WATANABE ET AL.

**Examiner**

Betelhem Shewareged

**Art Unit**

1794

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 9-13 is/are rejected.
- 7) ☒ Claim(s) 6-8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/CI/CC)  
Paper No(s)/Mail Date 4/22/08/8/28/08

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Applicant's response filed on 08/26/2008 has been fully considered. Claims 12 and 13 are added, and claims 1-13 are pending. The claim objection has been withdrawn in view of Applicant's comments.
2. The rejection of claims 1-4, 6 and 9-11 under 35 U.S.C. 103(a) as being unpatentable over Sismondi et al. (US 6,387,473 B1) in view of Totani et al. (US 2001/0009712 A1), Tsuchiya et al. (US 6,495,242 B1) and Quintens et al. (US 2002/0094421 A1); and the rejection of claims 1-3, 5 and 7-11 under 35 U.S.C. 103(a) as being unpatentable over Kiyama et al. (WO 02/34541 A1) {Kiyama et al. (US 2003/0072925 A1) is used as an English translation.} in view of Totani et al. (US 2001/0009712 A1) have been withdrawn because Totani does not teach the claimed particle size of the pigment in the pigment layer.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 5, 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Mukoyoshi et al. (US 6,187,430 B1).
5. Claims 1 and 10: Mukoyoshi teaches an ink jet recording sheet comprising a substrate and an ink receiving layer (abstract). The recording sheet further comprises

an undercoat layer between the substrate and the ink receiving layer (col. 5, line 12).

The undercoat layer comprises a pigment having a secondary particle size of 2-8  $\mu\text{m}$  (col. 5, line 34). The ink receiving layer comprises inorganic particles, binder (col. 7, line 53), and boric acid (col. 14, line 42). The dry weight of the undercoat layer is 2-100g/m<sup>2</sup> (col. 7, line 30), and the dry weight of the ink receiving layer is 1-30g/m<sup>2</sup> (col. 15, line 1). 20-120% of 2-100gsm of the undercoat layer is calculated to be 0.4-120gsm; and 0.4-120gsm includes the above 1-30gsm ink receiving layer of Mukoyoshi.

6. Claim 5: Mukoyoshi teaches that the inorganic particles comprise wet process silica particles having a secondary particle size of 10-400nm (col. 8, lines 1-31).

7. Claim 11: Mukoyoshi teaches that the recording sheet has a degree of gloss of 50% or more.

### ***Response to Arguments***

8. Applicant's argument is based on that the Examiner does not point out a disclosure in Mukoyoshi of the limitation: "50% by volume or more of the total volume of the pigment has a secondary particle diameter of not less than 1.2  $\mu\text{m}$  and not more than 15  $\mu\text{m}$ ." This argument is not persuasive for the following reason. 50% or more includes 100%, and since Mukoyoshi is silent with respect to the vol. % of particles having secondary particle size of 2-8 $\mu\text{m}$ , it is interpreted that 100 vol. % of the pigments have secondary particle size of 2-8 $\mu\text{m}$ . Thus the above values (i.e., vol. % and particle size) overlap with the claimed limitations.

9. Applicant further argued that the Examiner cites col. 14, line 42, which discloses a gelatinizing agent that may be applied in one of four ways (col. 14, lines 25-40), with the fourth way being contained in the coating liquid. This gelatinizing agent may be boric acid, formic acid, salts of these, aldehyde compounds and epoxy compounds. Applicant submits that this does not represent an anticipating disclosure of boric acid, since boric acid is only one of many possibilities. Note that none of the Examples in the reference appears to use boric acid as the gelatinizing agent. This argument is not persuasive because in col. 14, line 42 boric acid is listed as the crosslinking agent, and the invention of Mukoyoshi is not limited to the Examples only.
10. Applicant also argued that the Examiner cites col. 7, line 30, which discloses that the undercoat is coated at  $2-100 \text{ g/m}^2$  and col. 15, line 1, which discloses that the cast-coated layer is coated at  $1 \text{ to } 30 \text{ g/m}^2$ . However, these lines do not represent a specific disclosure of the limitation of 20% to 120% of first ink-receiving layer to pigment layer, which is a ratio limitation. This argument is not persuasive for the following reason. 20-120% of  $2-100\text{gsm}$  of the undercoat layer is calculated to be  $0.4-120\text{gsm}$ ; and  $0.4-120\text{gsm}$  includes the above  $1-30\text{gsm}$  ink receiving layer of Mukoyoshi. Thus the claimed ratio limitation is taught by Mukoyoshi.

### ***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 2, 3, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukoyoshi et al. (US 6,187,430 B1), as applied to claim 1 above, and further in view of Totani et al. (US 2001/0009712 A1).

13. Mukoyoshi teaches an ink jet recording sheet as set forth above.

14. Claim 2: Mukoyoshi does not teach the oil absorption value of the pigment in the undercoat layer. However, Totani teaches an ink jet recording sheet comprising undercoat layer containing a pigment having oil absorption of 250ml/100g [0054]. Mukoyoshi and Totani are analogous art because they are from the same field of endeavor that is the ink jet recording medium art. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Totani (i.e., selecting the oil absorption of the pigment to be 250ml/100g) with the invention of Mukoyoshi, and the motivation would be, as Totani suggests, controlling the water resistance property of the recording sheet [0054].

15. Claim 3: Mukoyoshi does not teach the pH value of the undercoat layer and the ink receiving layer. The experimental modification of this prior art in order to ascertain optimum operating conditions fails to render applicants' claims patentable in the absence of unexpected results. *In re Aller*, 105 USPQ 233. One of ordinary skill in the art would have been motivated to adjust the pH value of the undercoat layer and the ink receiving layer, and the motivation would be to optimize the hardening and thickening properties of the layers while maintaining enhanced ink absorbing property of the recording medium. A prima facie case of obviousness may be rebutted, however,

where the results of the optimizing variable, which is known to be result-effective, are unexpectedly good. *In re Boesch and Slaney*, 205 USPQ 215.

16. Claims 12 and 13: The Office realizes that all of the claimed effects or physical properties are not positively stated by the reference(s). However, the reference(s) teaches all of the claimed ingredients. Therefore, the claimed effects and physical properties, i.e. gas permeability would implicitly be achieved by a composite with all the claimed ingredients. If it is the applicant's position that this would not be the case: (1) evidence would need to be provided to support the applicant's position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients.

### ***Response to Arguments***

17. Applicant's argument is based on that the Examiner does not point out a disclosure in Mukoyoshi of the limitation: "50% by volume or more of the total volume of the pigment has a secondary particle diameter of not less than 1.2  $\mu\text{m}$  and not more than 15  $\mu\text{m}$ ." This argument is not persuasive for the following reason. 50% or more includes 100%, and since Mukoyoshi is silent with respect to the vol. % of particles having secondary particle size of 2-8 $\mu\text{m}$ , it is interpreted that 100 vol. % of the pigments have secondary particle size of 2-8 $\mu\text{m}$ . Thus the above values (i.e., vol. % and particle size) overlap with the claimed limitations.

18. Applicant further argued that in paragraph [0053] of Totani, the statement is made that the inorganic pigment usually has a major axis of particles preferably in the

range of 0.5  $\mu\text{m}$  to 50.0  $\mu\text{m}$ , and this range does not fall under the presently claimed range, i.e., 50% by volume or more of the total volume of the pigment has a secondary particle diameter of not less than 1.2  $\mu\text{m}$  and not more than 15  $\mu\text{m}$ . Totani therefore does not provide this limitation of claim 1. This argument is not persuasive for the following reason. The particle size in [0053] of Totani is not a secondary particle size. Furthermore, the reference of Totani is not used to teach the claimed secondary particle size, it is used to teach the criticality of keeping oil absorption of particles at 250ml/100g or less in order to control the water resistance property of the sheet.

19. Applicant also argued that Totani discloses a biaxially oriented film as a substrate, while Mukoyoshi generally discloses use of paper sheets. Given Totani's specificity for biaxially oriented films, it is not clear that there is a motivation for combining Totani and Mukoyoshi. This argument is not persuasive for the following reason. Totani is not used to teach the claimed substrate, it is used to teach the criticality of keeping oil absorption of particles at 250ml/100g or less in order to control the water resistance property of the sheet. The motivation for combining Totani and Mukoyoshi is disclosed in [0054] of Totani, and that is to control the water resistance of sheet.

20. In addition, Applicant argued that Totani relates to an ink jet recording sheet comprising a film support, not a paper support. The results associated with the present invention, that is, avoiding the problem of cracking of the surface of the ink-receiving layer on a paper support, are therefore unexpected over this reference. This argument is not persuasive for the following reason. Totani is not used to teach the claimed

substrate, it is used to teach the criticality of keeping oil absorption of particles at 250ml/100g or less in order to control the water resistance property of the sheet.

21. Claim 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukoyoshi et al. (US 6,187,430 B1), as applied to claim 1 above, and further in view of Quintens et al. (US 2002/0094421 A1).

22. Claim 4: Mukoyoshi teaches an ink jet recording sheet as set forth above. Mukoyoshi does not teach that the ink receiving layer comprises alumina hydrate. However, Quintens teaches an ink jet recording medium comprising an ink receiving layer containing a pigment and a binder (abstract). The pigment comprises boehmite [0072]. Mukoyoshi and Quintens are analogous art because they are from the same field of endeavor that is the ink jet recording medium art. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the boehmite of Quintens with the invention of Mukoyoshi, and the motivation would be to enhance the ink absorbing property of the layer.

23. Claim 9: Mukoyoshi teaches an ink jet recording sheet as set forth above. Mukoyoshi does not teach that the ink receiving layer comprises polyaluminum hydroxide. However, Quintens further teaches that the ink receiving layer comprises a cationic substance such as polyaluminum hydroxychloride [0080]. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the cationic substance of Quintens with the invention of Mukoyoshi, and the motivation

would be, as Quintens suggests, increasing the capacity of the layer for fixing and holding the dye of the ink [0078].

### ***Response to Arguments***

24. Applicant's argument is based on that in Quintens, paragraph [0073] discloses that the preferred pigment is silica having average particle size from 1 to 15 $\mu$ m. Clearly, these are analogous to Mukoyoshi's pigment particles, and not to Mukoyoshi's "specific fine particles" of the cast-coated layer. This argument is not persuasive for the following reason. There is nothing in Quintens that teaches or Quintens does not expressly disclose that the boehmite cannot be used as the pigment in the ink receiving layer. Furthermore, there is nothing that teaches that the 1-15 $\mu$ m particle size of amorphous silica represents the particle size of **all** of the inorganic pigment; certainly it does not represent the particle size of the boehmite. In addition, the term "ultrafine" is a relative term; and renders the claim ambiguous. The term does not have a well-defined meaning in the art. The necessary degree of fineness has not been defined in the claim. The particle size of the claimed ink receiving layer is not recited in claim 4.

25. Applicant also argued that Quintens uses PET film as the support, not paper. This argument is not persuasive because Quintens is not used to teach the claimed support, it is used to teach the claimed alumina hydrate and polyaluminum hydroxide.

***Allowable Subject Matter***

26. Claims 6-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. A combination of the claimed first ink receiving layer and the claimed second ink receiving layer along with the claimed pigment layer as recited in claims 6-8 has not been taught or suggested by the combination of the above prior arts.

***Conclusion***

27. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

28. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 1794

29. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betelhem Shewareged whose telephone number is (571)272-1529. The examiner can normally be reached on Monday-Friday 9am-5pm.

30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on 571-272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

31. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BS

November 29, 2008.

/Betelhem Shewareged/

Primary Examiner, Art Unit 1794